A-Level Biology

Paper 2

Unsolved Topical

Past Papers with Marking Schemes

All Variants

2014-2021

Preface

Excellence in learning can't be claimed without application of concepts in a certain context. In this regard one of the perfect approach is to start logically in chunks; like chapter wise learning and applying it on exam based questions.

This booklet provides an opportunity for practice of exam based questions which has been classified on the basis of syllabus topics and more precisely on teacher's recommendation basis. Extensive working of Team MS Books has tried to take this booklet to perfection by:

- Removing all the repeated questions but added their references at relevant places.
- Keeping all the question in a hierarchy from early years to most recent years.
- Adding Answering Key / Marks Scheme at the end of each topic.
- Maintaining actual spacing between consecutive questions and within options as per CIE format which gives students a more realistic feel of attempting question.

In addition to all this; review, feedback and contribution in this booklet by various competent teaches of subject belonging to renowned school chains make it most valuable resource and tool for both teachers and students. With all believes in strengths of this resource material I can confidently claim its worth in achieving brilliance.

Subject Head

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Cell Structure

Q2(a)(b)/22/M/J/14

1   Fig. 2.1 is a transmission electron micrograph of cells from a spinach leaf.

Fig. 2.1

(a)   Name the organelles **A**, **B** and **C**.

A ....

B ....

C ....
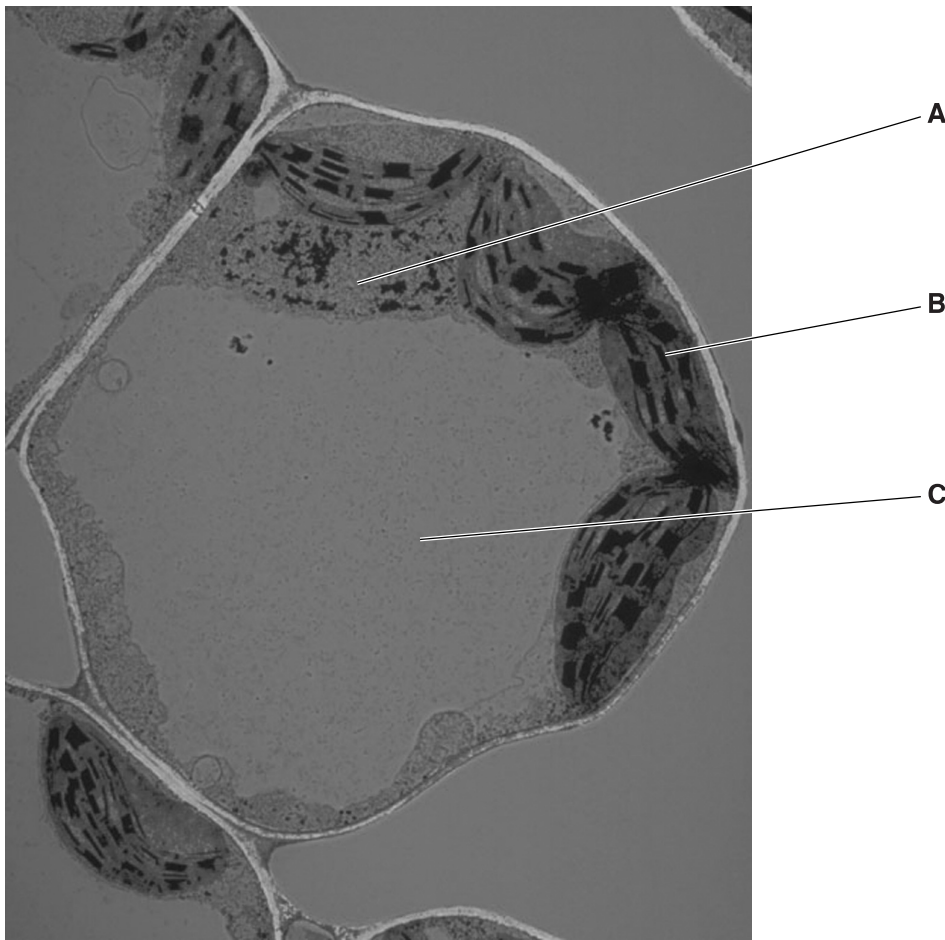   [3]

(b)   List two cell structures that could be present in animal cells that are not present in plant leaf cells.

1. ....

2. ....
                                                                                                        [1]

Q6(c)/22/O/N/14

2   Fig. 6.1 shows *A. tumefaciens* on the surface of cells of a tobacco plant, *Nicotiana plumbaginifolia*.
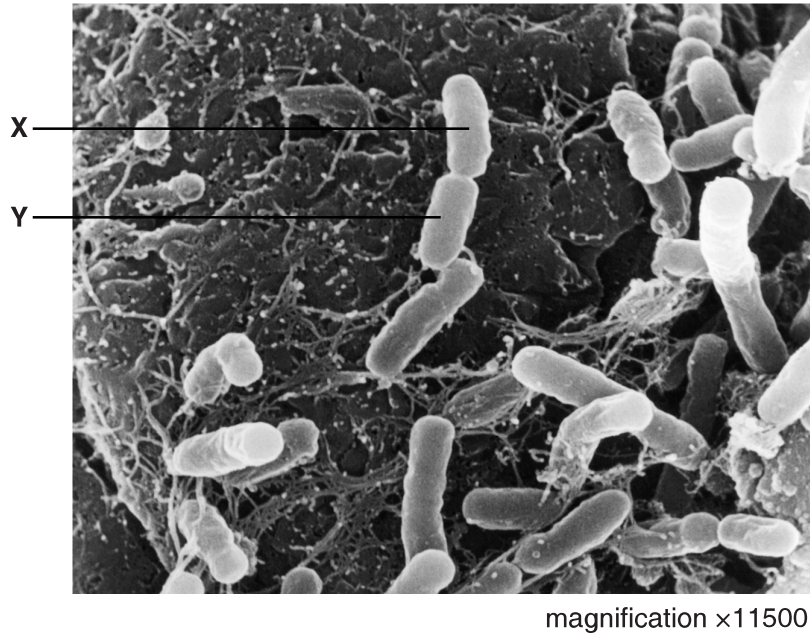
The cells **X** and **Y** are newly formed cells.

magnification ×11500

Fig. 6.1

(c)   Calculate the actual length of cell **X** in micrometres.

Show your working.

answer .... μm [2]

Q1(e)/23/O/N/14

3 Fig. 1.1 is a photomicrograph of plant root cells near the growing tip. Some of the cells are undergoing mitosis.
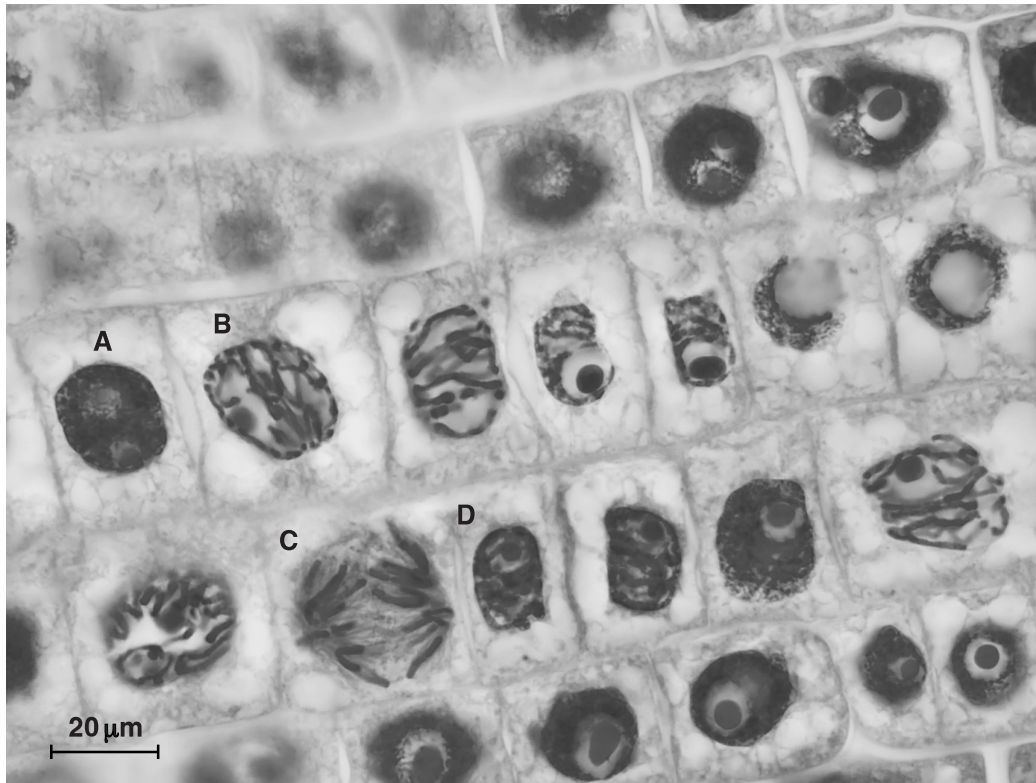

Fig. 1.1

(e) Calculate the magnification of Fig. 1.1.

Show your working and give your answer to the nearest whole number.

magnification × ....

[2]

Q3(c)/22/M/J/15

4   Fig. 3.2 shows red blood cells within a capillary. The capillary shown in Fig. 3.2 allows the rapid exchange of substances between the blood, tissue fluid and body cells.
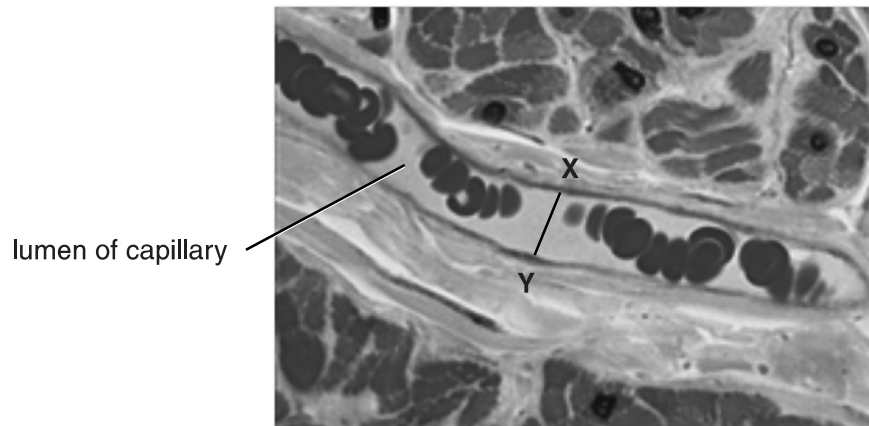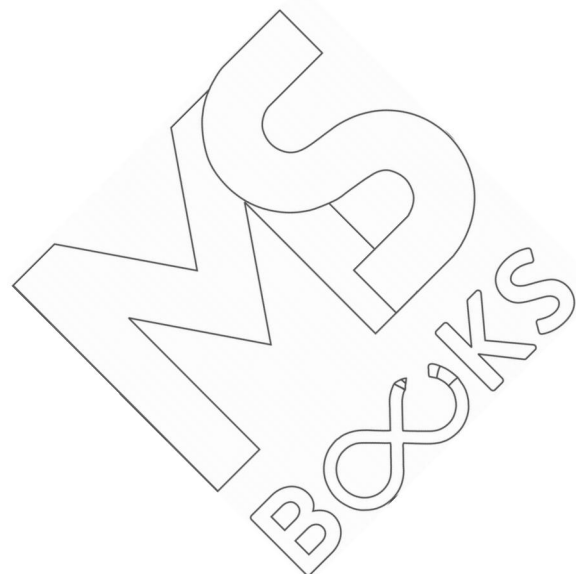

lumen of capillary

X

Y

Fig. 3.2

(c)   The actual diameter of the lumen of the capillary at the point **X–Y** in Fig. 3.2 is 9.5 μm.

Calculate the magnification of the image shown in Fig. 3.2. Show your working.

magnification × .... [2]

Q2(a)(b)/22/M/J/14

1 **(a)**   **A =** nucleus ;   **R** nucleolus **R** nuclear **R** nuclei

       B = chloroplast ; **A** chloroplasts

       C = vacuole ;   **A** vacuoles   **A** large / central / **AW**, vacuole   [3]

  (b)   *both must be correct*

      microvillus / microvilli ⎫
      centriole / centrioles ⎬ *any two structures for one mark ;*
      cilium / cilia   ⎪ **A** lysosome(s)   [1]
      flagellum / flagella ⎭

Q6(c)/22/O/N/14

2 **(c)** 1.1–1.13 (µm) ;;   **OR**   1.2–1.22 (µm) ;;

    $\left[\dfrac{13\,mm / 13000\,µm}{11500} \right]$ $\left[\dfrac{14\,mm / 14000\,µm}{11500} \right]$

    one mark only for
    correct formula and measurement (13 / 14 mm) but incorrect conversion
    or for correct formula used with a measurement of 12 or 15 mm   **2**
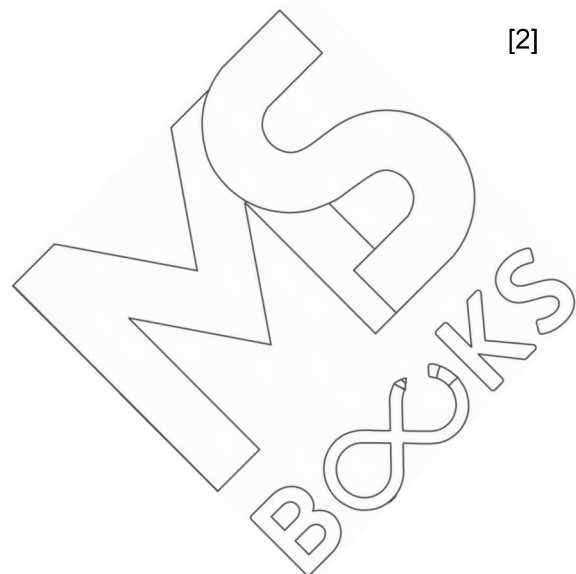

Q1(e)/23/O/N/14

3 (e)   *acceptable range for measuring line 14 mm to 16 mm*
    if the answer is between 700 and 800 allow 2 marks

    if measurement of 14–16 mm is incorrectly converted allow one mark for correct
    measurement and correct formula – scale length divided by 20

    15 000 / 20

    750 ;;   [2]

4 (c)   (x) 1000 ;; **A** (x) 947 / 947.4 or 1053 / 1052.6
if units given = one mark only

if incorrect allow one mark for correct length measured <u>9 / 9.5 / 10</u> mm <u>and</u> knowledge of
formula is correct (magnification = image length / actual length – this can also be seen by
workings e.g. 9.5 mm ÷ 9.5 μm) but incorrect conversion factor used for final calculation   **[2]**

5 (a)   (endoplasmic reticulum / RER) has ribosomes ;
(ribosomes / RER) site of protein synthesis ;
antibodies are proteins ;
RER for, modification / transport / transport vesicle formation ;   [max 2]

   (b)   3000 ;; **A** 2933 / 3067 *if units given allow one mark only*
if incorrect allow one mark for correct length measured <u>44 / 45 / 46</u> mm <u>and</u>
knowledge of formula is correct (magnification = image length / actual length –
this can also be seen by workings e.g. 45 mm / 15 μm) but incorrect conversion
factor used for final calculation   [2]

6 (a)   (light microscope) observe living cells / cells would be killed (with EM) ;
vacuum used in electron microscope ;
(light microscope) can have water on slide (to allow cells to move) ; ora
AVP ; e.g. more readily available for use
          organisms move in response to light   [max 2]